

Comparison of Space Utilization Patterns of After-school Daycare Center by Pupil's Numbers

Shotaro Kanzaki¹, Mahito Nakazono² and Satiko Mishima³

¹Graduate Student, Graduate School of Sciences and Technology for Innovation, Yamaguchi University, Japan

²Professor, Graduate School of Sciences and Technology for Innovation, Yamaguchi University, Japan

³Assistant Professor, Institute of Science of Environmental Systems, Shimane University, Japan

Abstract

With the revision of the Child Welfare Act in 2014, new criteria for school childcare facilities were established, but the prompt shift to the operation complying with new standards was difficult in case of existing facilities. Therefore, the emphasis was placed on the utilization of conventional facilities. In this study, the relationship between the spatial conditions of the facility and the number of available children is examined with three population sizes of 20 children, 24 to 25 children, and 28 children. This survey was conducted for children and staff who use facilities at sunny and rainy days of weekly after school. The place and contents of action were recorded in the plan at intervals of 10 minutes from unlocking to locking of the facility, and one video camera was installed in the multipurpose room and play room, in addition the daily living situation was photographed for the whole period. After school on sunny days, changes in the program were confirmed due to the increase in the number of children, but many children played at outdoors in sunny days, circumstances exceeding the spatial capacity were avoided. However, in rainy days, in the free play time which spends a lot of time in a day, the interference of children's play became prominent due to the increase in the number of children. As a result, it can be said that the group size of 28 children is over the capacity and the capacity at this facility is about 25 children.

Keywords: Schoolchild Care Facility, Conversion, Pupil's number, After-school, Usage

1.Introduction

An after-school daycare center was institutionalized by the Child Welfare Law was introduced in 1997, and facility development was promoted. However, the facility demand has increased due to increasing the number of dual-income households in recent years. So, "Promotion Project for After School Child Classes" that is for all pupil was introduced in 2007 and the number of the facilities tends to increase. To respond to increasing in daycare demand and improving the facility standards, the child age for the daycare center was raised to the 6th grade in the revision of the Child Welfare Law in 2014. Moreover,

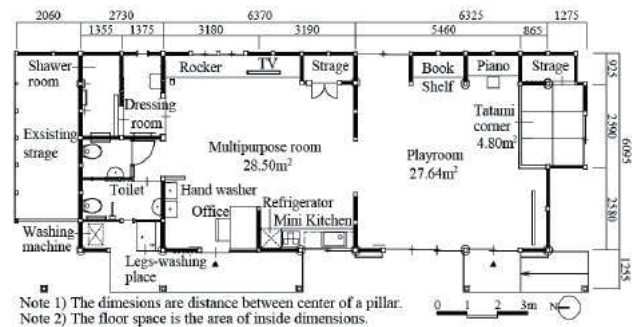


Fig.1. Plan of The Facility



Photo 1 Multipurpose room

Photo 2 Playroom

Contact Author: name, position, affiliation,
Shotaro Kanzaki
Graduate Student
2-16-1, Tokiwadai, Ube City, Japan
Tel: 080-1924-5928
e-mail: g016ve@yamaguchi-u.ac.jp

the facility capacity and the area per person were clarified as establishment standards by the recommended value of the guideline.

And, the facility was required the facility capacity of 40 or less pupils and the area per person with 1.65 m² or more.

However, it is difficult to change management quickly according to new establishment standards in the existing facilities. As a direction for increasing facilities in the future, it is an issue to respond to increase daycare demand by utilizing existing facilities effectively in the school district in addition to promoting the utilization of vacant classrooms at elementary schools. There are many daycare center opened not only on weekdays but also on holidays. Therefore, they are important issues to establish a management system that can carry out childcare smoothly in all day and to secure the space that functions as the fulfilling life, playing and learning program under defining the facility as a place of daily life for the pupils.

And, the authors have reported comparing the usage of 10, 15 and 20 pupils about the relationship between the group size and the usage of weekday in the facility with the two-room and three domain type and facility capacity of 25 pupils.

This paper aims to investigate the phenomena caused by the difference in group size with 20, from 24 to 25 and 28 pupils. Furthermore, this paper considers the problems caused by exceeding the facility capacity of 25 pupils in the after-school daycare center on weekdays, and examines the facility capacity in the facility.

2. Method of study

Figure 1 shows the facility plan of after-school daycare center "Swallow House" where is converted from farmer's barn of regional welfare home "Nakamura-san-chi" in Kikugawa town, Shimonoseki City. This facility is space configuration of the two-room and three domain type, and the farmer's barns and livestock shed were converted into the multipurpose room (photo1), playroom (hereinafter referred to PR) (photo2), tatami corner, toilets and shower room. The occupied area except for hand wash, kitchen and storage is 60.9 m² (multipurpose room: 28.5 m², PR: 27.6 m², tatami corner: 4.8 m²), and the facility

capacity is 25 pupils (2.4 m² / pupil). About, the investigation, we have collected the data on grade and gender of registered pupils and done the usage investigation on weekdays. The investigation was performed from June, 2013 to August, 2016. The usage investigation is recording the place and action of the pupils and staffs at intervals of ten minutes from the opening to lunch time. In addition, a video camera was installed in the multipurpose room and PR and took the whole day life scene in all days.

3. Form of play on sunny days (Fall of 2013 and 2016)

Figure 2 and 3 show the typical scenes during each investigation period. Details of the usage are considered by each program.

Pupils come according to the time coming out of school, and early pupils come around 15:00 in 2013 and 2016. Snacks and study time were conducted as the first program. The pupils ate snacks surround two desks in the playroom after coming, because the number of pupils was small in 2013 (Fig.2-a). The pupils finished to eat snacks started studying in the multipurpose room. The staff added desks in also the playroom when all pupils come together, because pupils couldn't stay in only multipurpose room (Fig.2-b). Two rooms were always used in 2016, because the number of pupils increased. And pupils finishing study in difference time, because coming time was different. Therefore, the staff let the pupils sit down firstly in the playroom with the tatami corner in order to securing the space for the pupils finishing early. In the case of from 24 to 25 pupils, the staffs set 5 desks in the playroom, and they let the pupils sit down there by grade from pupils who come and the pupils studied at same seat after snacks time (Fig 2-c). The pupils who finishing study early played static in the tatami corner until the playroom was available. The staffs cleaned up the desks when all pupils finished study in the playroom, and pupils played under watching of the staff (Fig.2-d, Photo 2-1). When 28 pupils came, the staffs increased the desks in the multipurpose room and let the pupils sit down from the playroom (Fig. 2-e). The staffs cleaned up the desks of the playroom in the same method with the case of from 24 to 25 pupils (Fig.2-f). In this way, there are scenes using the space composition of the two-room

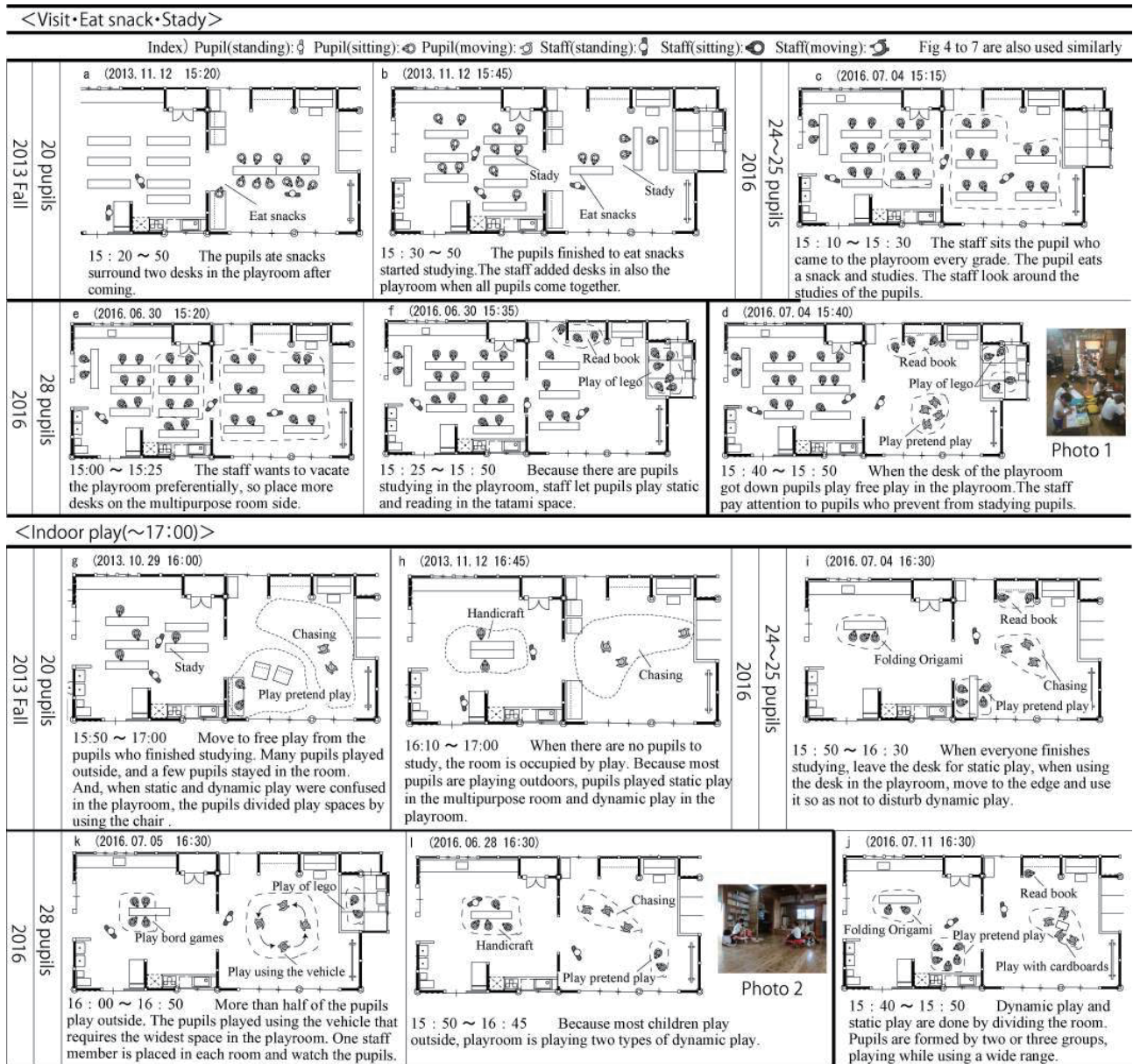


Fig.2. Typical Scene used after School in 2013 Fall and 2016(no.1)

and three domain type effectively in order to responding increase of pupils, such as making the program shift smoothly by securing an escape place for next program and rationalized leading by teaching each grade.

In 2013, pupils were still studying at around 16:00, and played in only the playroom. Many pupils played outside, and a few pupils stayed in the room. The pupils played pretending or chasing play needing wide space in the playroom. And, when static and dynamic play were confused in the playroom, the pupils divided play spaces by using the chair (Fig.2-g). There were no pupils studying at 16:20, pupils played static play in the multipurpose room and dynamic play in the playroom (Fig.2-h).

any pupils played outside in also 2016. When pupils played using the desks in the playroom, the staffs let the pupils play the rear of the room so as not to disturb dynamic play. And pupils played with cardboards etc. in the playroom (Fig.2-I, j). In the case of 28 pupils, the pupils played and chased using the vehicle that requires the widest space in the playroom, and some pupils made something in the multipurpose room and played using the lego at the tatami corner (Fig.2-k, l, Photo 2-2). Almost pupils played outside in free time on sunny days, so there are a few pupils remaining in the room. In addition, the pupils in the room divided static and dynamic play space in two rooms, so they could use sufficient space. Therefore, there were no influence

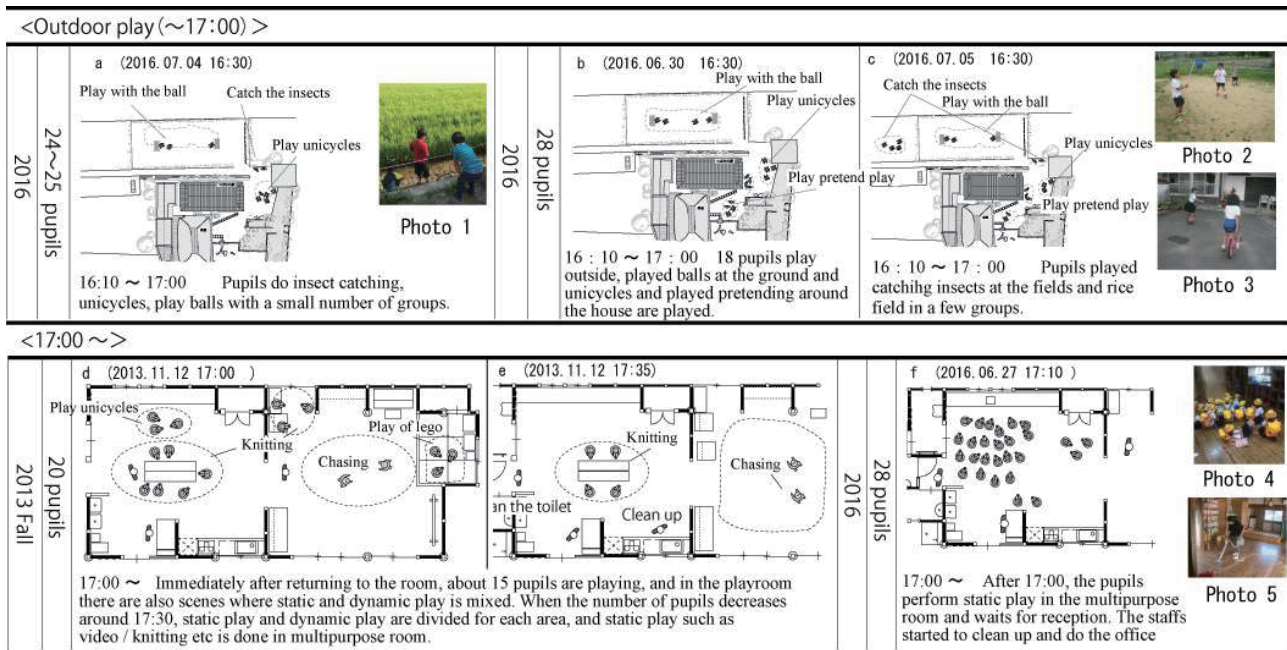


Fig.3. Typical Scene used after School in 2013 Fall and 2016(no.2)

by increase of pupils.

The pupils in outside were mainly in the south side space of the facility, ground, front of the main house entrance and garden, and play space was separated according to the kind of play. And, the staffs watched the pupils in each area. Pupils played in small groups, such as ball playing on the ground, insect catching and unicycles in the garden and near rice fields in the case of from 24 to 25 pupils in 2016. And, they continued same play for a long time without changing the kind of play (Fig.3-a, Photo 3-1). The number of pupils playing outside increased with 18 out of 28 pupils in the case of 28 pupils in 2016, and many pupils played in front of the entrance and the south side of main house. There were many pupils who changed the kind of play, because there were many plays in the same space. And, there were the scenes of playing ball using the existing soccer goal and playing with athletics at the ground (Fig.3-b). In addition, increase of pupils affected increase of the group in outside, and max of the groups was six or seven groups (Fig.3-c, photo 3-2, 3). Therefore, increase of pupils affected method of making groups, and there were many small groups in outside play. And, there were many types of plays.

The pupils returned to the room at 17:00 and waited for the parents. They played freely after 17:00 in 2013, and played by dividing static and dynamic play in the multipurpose room and

playroom. They played in groups, such as playing cards and knitting in the multipurpose room, chasing and pretending in the playroom and playing with lego in the tatami corner at 17:00 (Fig 3-d). The number of groups reduced at 17:35, and the staffs started to clean up and do the office work (Fig.3-e). All pupils returned home before 18:00 and it ended. The staffs changed a policy in 2016, so pupils only watched the video or played static 2016, play in the multipurpose room after 17:00, because of preventing pupils from being confused by increasing pupils, and reducing the burden of the staffs. The staffs shared the roles, such as office work, cleaning up plumbing, vacuuming of the playroom and handling pupil's parents (Fig 3-f, pictures 3-4, 5). All pupils returned home before 18:00 and it ended. Therefore, the staffs try to rationalize their duties, increase of pupils affects staffs burden especially after 17:00.

4. Form of play on rainy days (2013 rainy season and 2016)

Fig 4 show the typical scenes during each investigation period. The average number of pupils was 15 in the rainy season of 2013, and there is enough space. So, pupils could eat snacks in the playroom and study in the multipurpose room. The pupils started to study in the multipurpose room from the pupils who finished eating snacks

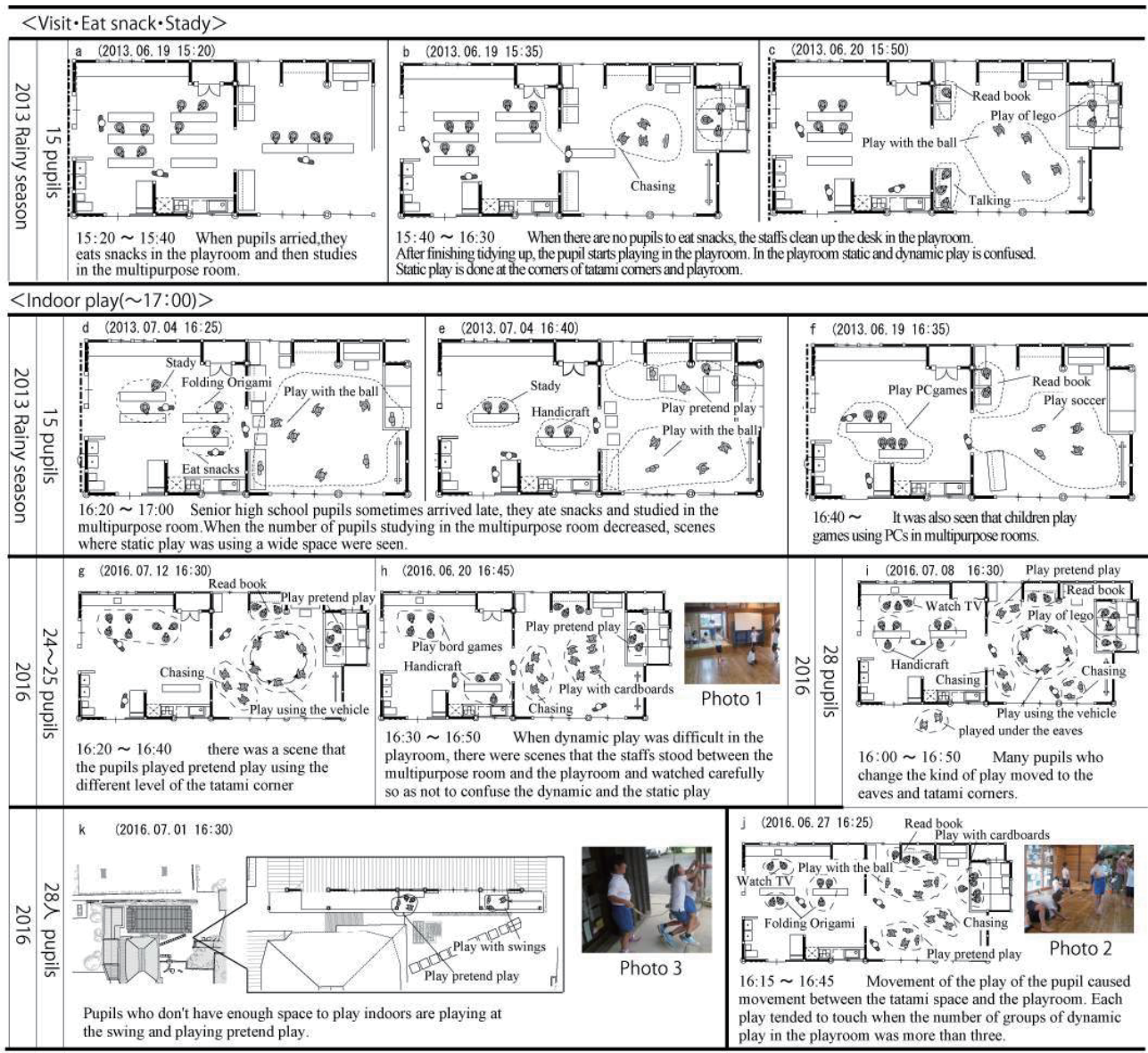


Fig.4. Typical Scene used after School in 2013 Rainy Season and 2016

(Fig.4-a). After that, the pupils finishing to study began to play static and dynamic play in the playroom. They played dynamic play in the center of the playroom and static play in the rear of the playroom and the tatami corner (Fig.4-b, c). The pupils studied in multipurpose room and played dynamic play in playroom static play in a tatami corner. So, they could use the space composition of the two-room and three domain type effectively, and the program proceeded smoothly. Two rooms were always used same with sunny days in 2016, because the number of pupils increased. The flow of coming, snacks and study was same with sunny days.

The pupils played after studying. In 2013, they ate snacks and studied in the multipurpose room, because other pupils played in the playroom. When

playing dynamic play in the playroom was difficult, there were the scenes of using the chair to separate the space. When there were no pupils studying in the multipurpose room, the room was opened as a place for static play. And the pupils divided into static and dynamic play in two rooms (Fig.4-d, e). The pupils played ball playing and chasing in the playroom and some pupils played games using personal computers in the multipurpose room (Fig.4-f). And, some pupils played under the eaves in 2013. Some pupils played under the eaves in the case of from 24 to 25 pupils in 2016, and they played using vehicles etc. that needs the widest space in the playroom. When securing sufficient space was difficult, there was a scene that the pupils played pretend play using the different level of the

tatami corner (Fig.4-g). When dynamic play was difficult in the playroom, there were scenes that the staffs stood between the multipurpose room and the playroom and watched carefully so as not to confuse the dynamic and the static play (Fig. 4-h, Photo 4-1). There are more pupils playing under the eaves in case of 28 pupils than in case of from 24 to 25 pupils in 2016, but there was instantaneously scene that many pupils played in the room. When many pupils gathered in the playroom, there were the scenes that each play touched and affected between dynamic plays. When each play affected, the pupils tended to change the kind of play, moreover this situation affected play of other pupils. As a result, the number of groups in the room increases, and the time continuing one play becomes shorter. Many pupils who change the kind of play moved to the eaves and tatami corners (Fig.4-i). And, each play tended to touch when the number of groups of dynamic play in the playroom was more than three (Fig.4-j, photo 4-2). Playing under the eaves was done in 2013 and 2016 as well, and the pupils played house in the space around the facility entrance and played with the swing at the edge of the eaves (Fig.4-k, Photo 4-3). Therefore, the pupils play indoor basically on rainy days, so play of pupils affects the increase of pupils than sunny days. In 2013, static and dynamic play aren't in confusion by division of play space in the playroom and multipurpose room, because it is less than the facility capacity. In 2016, in the case of from 24 to 25 pupils that is facilities capacity, the pupils played using the different level, and played dynamic play in the playroom without interference between the groups. However, in the case of 28 pupils that exceeds the facility capacity, there are more groups and many pupils change the kind of play by interference between dynamic play. Playing under the eaves functions as a place of escape, but dynamic play by 28 pupils has the limit.

The flow of after 17:00 was same with sunny days.

5. Conclusion

From the above, the typical scenes on sunny and rainy days have been extracted.

The big changes caused by differences in group size are study time, free play time, and the time

returning to the room after 17: 00. The staff let the pupils sit down firstly in the playroom in order to securing the space for the pupils finishing early after studying. Moreover, there were the scenes that rationalize their duties in addition to trying to carry out the program smoothly.

Many pupils played outside in free time on sunny days, because this facility has full outdoor space. So, there is no influence by increase of pupils, and the play space can divide well in the room. About outdoor play, the increase of the pupils affects increase of groups and kinds of play, and the time continuing play becomes shorter. Most of the pupils played indoors on rainy days, because there is little place that can play outside. In the case of 28 pupils that exceeding the facility capacity, there were many interferences between dynamic plays. So, this facility is difficult to respond to 28 pupils by based on the duration and change in the number of groups. The staffs tried to rationalize their duties after 17:00 in order to preventing pupils from being confused by increasing pupils and reducing the burden of the staffs. Therefore, it was able to carry out study time and the program after 17:00 smoothly by using the space composition of the two-room and three domain type effectively as well as the sunny days. However, there are the influence of interference caused by exceeding the facility capacity in free time when occupies most of the time.

Therefore, 25 pupils are suitable for the facility capacity, because there are many influences of indoor play in the case of 28 pupils on rainy days.

6.Reference

- 1) Miyamoto, H, Iwabuti, T: Activities And Plans in School-Age child Care Centers, Transactions of AIJ. Journal of architecture and planning, No.618, pp.25-31, 2007.8
- 2) Simizu, H, Ono, H: State of living space composition of after school child care center, Transactions of AIJ. Journal of architecture and planning, No.668, pp.1799-1806, 2011.10
- 3) Tukada, Y, Koitou, A: Split Method And It's Effect of GAKUDOHOIKUSYO Seen From The Institution And The Way of Child Care, AIJ journal of technology and design, No.27, pp.223-228, 2008.6
- 4) Miake, K, Takahasi, H: A Study on the composition of spaces about care of school children after school hours center used detached hours, Summaries of technical papers of annual meeting of AIJ, E-1 fascicle, pp.59—60, 1997.9